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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

AN, SHAWN S

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/529,710	Applicant(s) BOYCE, JILL MACDONALD	
	Examiner SHAWN AN	Art Unit 2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-25 is/are rejected.
- 7) ☒ Claim(s) 2 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 6) <input type="checkbox"/> Other: _____ |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :3/29/05, 2/12/07, 8/31/07, 11/21/08, and 7/24/09.

DETAILED ACTION

Response to Preliminary Amendment

1. As per Applicant's instruction as filed on 3/29/05, claims 1-9 have been amended.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 9-25 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention.

Supreme Court precedent¹ and recent Federal Circuit decisions² indicate that a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. While the instant claim(s) recite a series of steps or acts to be performed, the claim(s) neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process.

For example, claim 9 is directed to a method for decoding video signal data for an image block, the method comprising:

obtaining a plurality of reference picture indices for the image block, each index corresponding to a particular reference picture;

determining implicit weighting factors responsive to the relative positioning of the image block and the plurality of reference pictures indicated by the plurality of reference picture indices and corresponding to each of the received plurality of reference picture indices;

¹ *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).

² *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

retrieving a reference picture corresponding to each of the received plurality of reference picture indices;

motion compensating the retrieved reference pictures; and

multiplying the motion compensated reference pictures by their corresponding implicit weighting factors, respectively, to form corresponding weighted motion compensated reference pictures without any ties to a particular apparatus/structure.

Since dependent claims 10-25 are directed to further limitations based on the method claim 9, claims 9-25 as a whole do not fall within the statutory classes as set forth in 35 U.S.C. 101.

¹ *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parkerv. Flook*, 437 U.S. 584,588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780,787-88 (1876).

² *In reBilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 3-10, 12, 14, 16-19, and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Etoh (6,081,551).

Regarding claim 1, Etoh discloses a video decoder (Figs. 2 and 8) for decoding video signal data for an image block with first and second reference picture indices to predict the image block, the decoder comprising:

a reference picture weighting factor unit (22c) responsive to the relative positioning between the image block and first and second reference pictures (24), the reference picture weighting factor unit having an output for determining implicit weighting factors corresponding to each of the first and second reference picture indices, respectively (col. 3, lines 56-67; col. 7, lines 8-23).

Regarding claim 9, Etoh discloses a method for decoding video signal data (Figs. 2 and 8) for an image block, the method comprising:

- obtaining a plurality of reference picture indices for the image block, each index corresponding to a particular reference picture (24);

- determining implicit weighting factors (22c) responsive to the relative positioning of the image block and the plurality of reference pictures indicated by the plurality of reference picture indices and corresponding to each of the received plurality of reference picture indices (col. 3, lines 56-67; col. 7, lines 8-23);

- retrieving a reference picture (from 24) corresponding to each of the received plurality of reference picture indices;

- motion compensating (22c) the retrieved reference pictures; and

- multiplying the motion compensated reference pictures by their corresponding implicit weighting factors, respectively, to form corresponding weighted motion compensated reference pictures (Fig. 5).

Regarding claim 3, Etoh discloses a variable length decoder (16) in signal communication with the reference picture weighting factor unit for providing the first and second reference picture indices to the reference picture weighting factor unit.

Regarding claim 4, Etoh discloses a motion compensator (22c) in signal communication with the reference picture weighting factor unit for providing motion compensated reference pictures responsive to the reference picture weighting factor unit.

Regarding claim 5, Etoh discloses a multiplier in signal communication with the motion compensator and the reference picture weighting factor unit for applying an implicit weighting factor to a motion compensated reference picture (Fig. 5).

Regarding claims 6 and 19, Etoh discloses the video signal data is streaming video signal data (Fig. 1, see Bit Stream) comprising block transform coefficients (DCT, 5).

Regarding claim 7, Etoh discloses prediction means (25) for forming first and second predictors from two different reference pictures, and combination means (9) for

combining the first and second predictors together using their corresponding implicit weighting factors to form a single combined predictor.

Regarding claim 8, Etoh discloses the two different reference pictures are both from the same direction relative to the image block (Fig. 9).

Regarding claim 10, Etoh discloses receiving the plurality of reference picture indices with the data for the image block in an implicit mode (24).

Regarding claim 12, Etoh discloses determination of motion vectors for the retrieved reference pictures relative to the image block (see Motion Vector into 22c).

Regarding claim 14, Etoh discloses the relative positioning of the image block and the plurality of reference pictures corresponds to the relative display times of the respective pictures (Figs. 10 and 13).

Regarding claim 16, Etoh discloses combining the weighted motion compensated reference pictures to form a combined weighted motion compensated reference picture (22c).

Regarding claim 17, Etoh discloses adding the combined weighted motion compensated reference picture to the data for the image block to predict the image block (9 and 25).

Regarding claim 18, Etoh discloses storing the predicted image block as a reference picture for future retrieval (24).

Regarding claim 21, Etoh discloses pre-computing at least one weighting factor and storing said at least one weighting factor for re-use (Fig. 5).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Etoh (6,081,551) in view of Suzuki et al (6,097,842).

Regarding claim 11, Etoh does not particularly disclose deriving the plurality of reference picture indices from the data for the image block in a direct mode.

However, Suzuki et al teaches picture encoding/decoding apparatus/method comprising using direct mode to predictively encode a B-picture using a motion vector of a directly previously decoded P-picture, and that direct mode may be used as a prediction mode, wherein the motion vector MV in the nearest P-picture encoded/decoded in the future may be used for encoding/decoding of the macroblock being encoded, and if the motion vector for the corresponding macroblock in the enlarged picture used as reference picture for forward prediction is MV, a motion vector MVB may be used for backward prediction in order to provide a technique which enables VO-based encoding/decoding to be easily achieved (col. 36, lines 65-67; col. 38, lines 1-15 and 25-43; col. 7, lines 25-27).

Therefore, it would have been considered obvious to a person of ordinary skill in the relevant art employing a method for decoding video signal data as taught by Etoh to incorporate Suzuki et al 's teaching as above so as to derive the plurality of reference picture indices from the data for the image block in a direct mode in order to provide a technique which enables VO-based encoding/decoding to be easily achieved.

8. Claims 20 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Etoh (6,081,551) in view of Sugiyama (5,089,889).

Regarding claim 20, Etoh does not particularly disclose forming first and second predictors from two different reference pictures, motion compensating each of the first and second predictors, and combining the first and second predictors together using their corresponding implicit weighting factors to form a single combined predictor.

However, Sugiyama teaches apparatus for adaptive inter-frame predictive encoding of video signal comprising forming first and second predictors from two different reference pictures, processing motion compensation, and combining the first

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and second predictors together using their corresponding implicit weighting factors to form a single combined predictor in order to eliminate the high frequency components of the prediction error signal, without significantly reducing the resolution of an image obtained by decoding an output signal produced from the predictive encoding apparatus (col. 9, lines 10-58; col. 12, lines 60-67; col. 4, lines 36-41).

Therefore, it would have been considered obvious to a person of ordinary skill in the relevant art employing a method for decoding video signal data as taught by Etoh to incorporate Sugiyama's teaching as above so as to form first and second predictors from two different reference pictures, motion compensate each of the first and second predictors, and combine the first and second predictors together using their corresponding implicit weighting factors to form a single combined predictor in order to eliminate the high frequency components of the prediction error signal, without significantly reducing the resolution of an image obtained by decoding an output signal produced from the predictive encoding apparatus.

Regarding claim 25, Etoh discloses the two different reference pictures are both from the same direction relative to the image block (Fig. 9).

Allowable Subject Matter

9. Claims 2 and (13, 15, 22-24) are objected to as being dependent upon rejected base claims 1 and 9, respectively, but would be allowable (contingent upon overcoming the 101 rejection for claims 9-25) :

if claim 2 is rewritten in independent form including all of the limitations of the base claim 1 and any intervening claims; and

if any one of claims 13, 15, and 22 is rewritten in independent form including all of the limitations of the base claim 9 and any intervening claims.

Dependent claims 2, 13, 15, and 22, recite novel features.

The art of record fails to anticipate or make obvious the novel features.

Accordingly, if the amendments are made to the claims listed above, and if rejected claims are canceled, the application would be placed in condition for allowance.

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10. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to *Shawn An* whose telephone number is 571-272-7324.

11. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

12. Information regarding the status of an application may be obtained from the patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SHAWN AN/

Primary Examiner, Art Unit 2621

8/01/09